

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
31 July 2003 (31.07.2003)

PCT

(10) International Publication Number
WO 03/062770 A1

(51) International Patent Classification?: G01H 1/00,
C07C 3/00, G01M 13/00

S-645 43 STRÄNGNÄS (SE). KUMMELSTAM, Jim
[SE/SE]; Elmavägen 11, S-645 92 STRÄNGNÄS (SE).
LINDBERG, Jarl-Ove [SE/SE]; Utsiktsvägen 32, S-645
42 STRÄNGNÄS (SE).

(21) International Application Number: PCT/SE03/00083

(22) International Filing Date: 20 January 2003 (20.01.2003)

(74) Agent: ALBIHNS STOCKHOLM AB; P.O. Box 5581,
S-114 85 STOCKHOLM (SE).

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
0200147-7 18 January 2002 (18.01.2002) SE
0200215-2 25 January 2002 (25.01.2002) SE
60/384,118 31 May 2002 (31.05.2002) US

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE,
SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
VC, VN, YU, ZA, ZM, ZW.

(71) Applicant (*for all designated States except US*):
SPM INSTRUMENT AB [SE/SE]; Box 4, S-645 21
STRÄNGNÄS (SE).

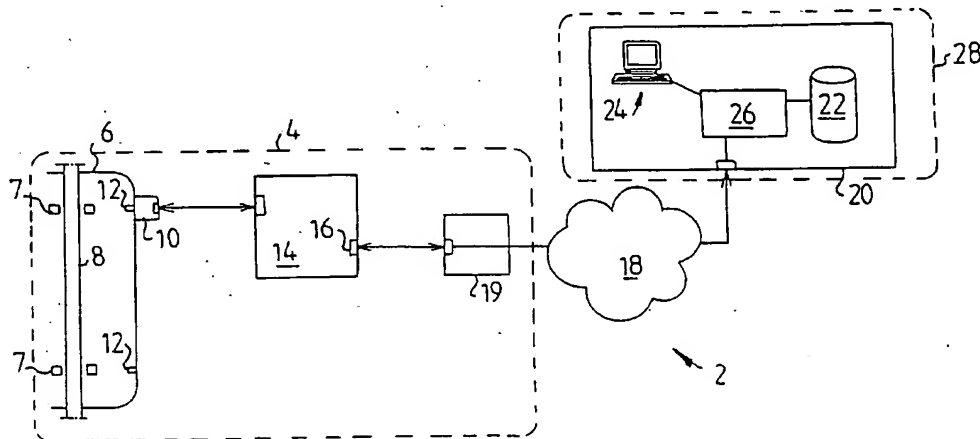
(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI,
SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN,
GQ, GW, ML, MR, NE, SN, TD, TG).

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): LINDBERG, Ste-
fan [SE/SE]; Slånärsstigen 10, S-645 43 STRÄNGNÄS
(SE). HEDLUND, Håkan [SE/SE]; Tranbärsstigen 15 B,

[Continued on next page]

(54) Title: AN ANALYSIS SYSTEM FOR ANALYSING THE CONDITION OF A MACHINE



(57) Abstract: A system for analysing the condition of a machine having a rotating shaft (8) and a measuring point (12); the system comprising a client part connectable to a communications network (18) for communication with a supplier part (20); said client part comprising: at least one sensor (10) attachable on or at said measuring point (12) for generating said measurement data dependent on rotation of said shaft; an analysis apparatus (14) for analysing the condition of the machine on the basis of said measurement data; said analysis apparatus (14) having a data processing means for processing condition data dependent on said measurement data; said data processing means comprising means for performing a plurality of condition monitoring functions (F1, F2, Fn); and a logger for registering use of at least one of said condition monitoring functions (F1, F2, Fn); a communication port (16) coupled to said data processing means and connectable to said communications network (18) for communication with said supplier part computer (20); user input/output interface (102, 106, 103, 182) coupled to said data processing means for enabling user interaction; means (50, 60, 70, 80, 132) for generating a request for an amount of usage of at least one of said condition monitoring functions (F1, F2, Fn).



Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

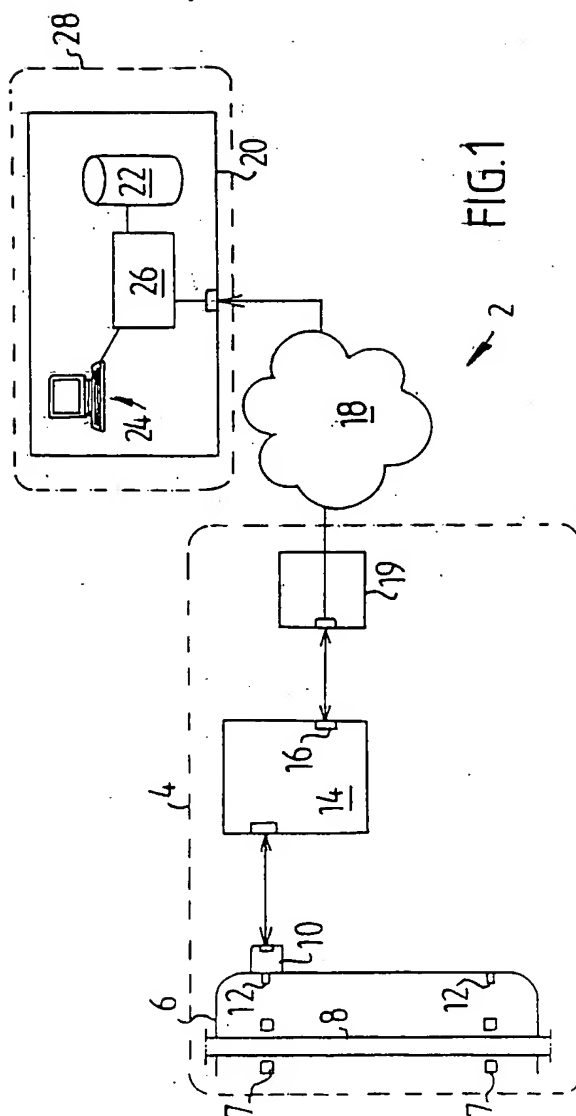


FIG. 1

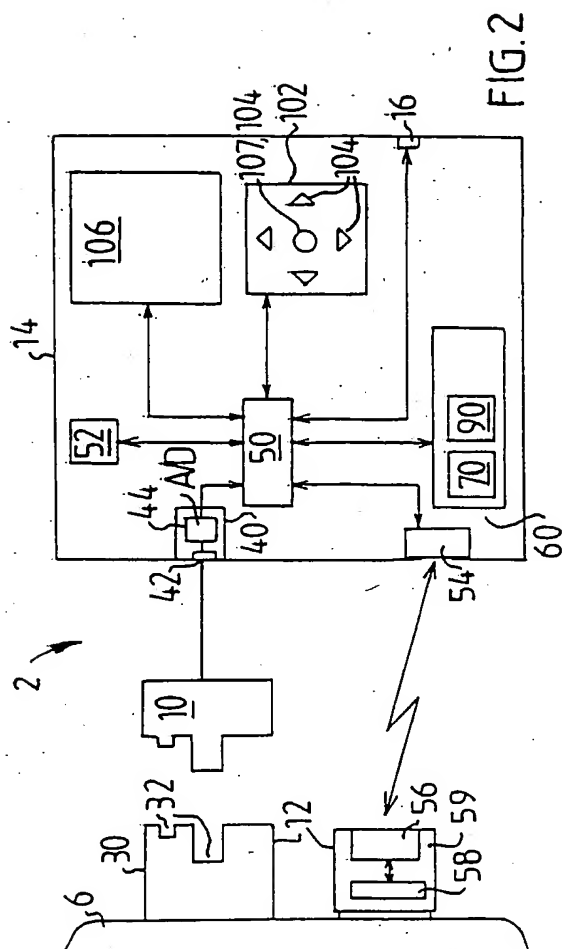


FIG. 2

2 / 15

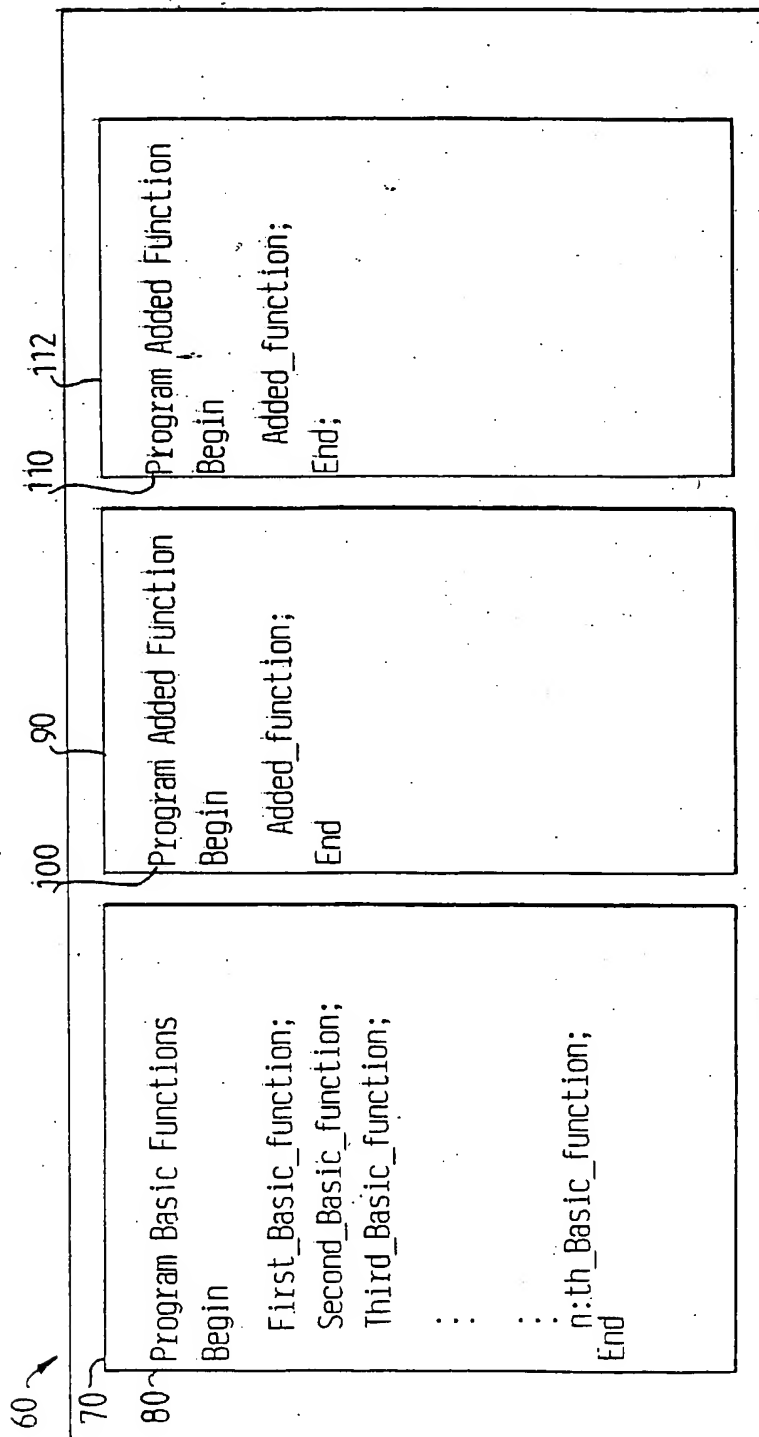


FIG.3

3 / 15

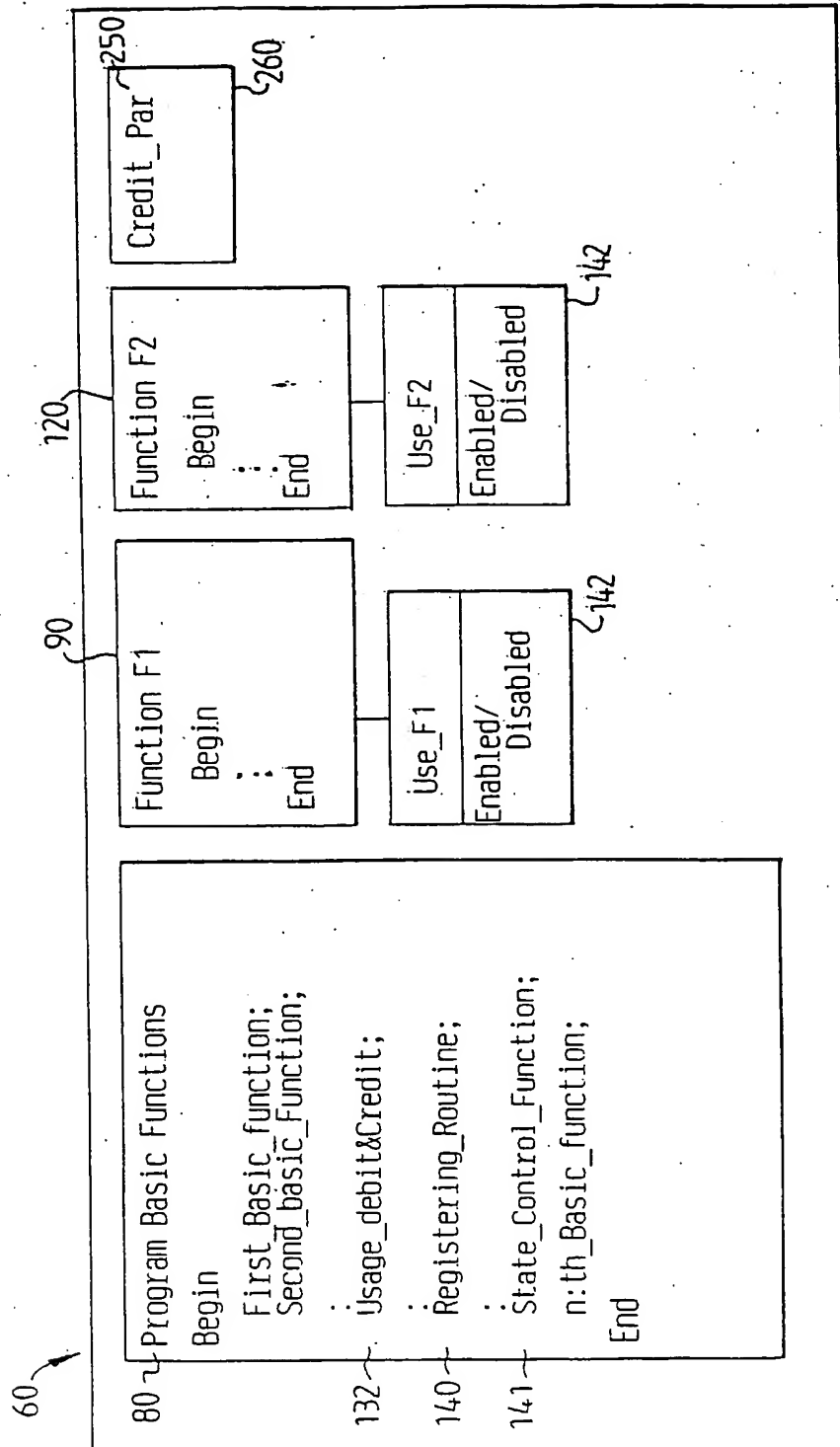
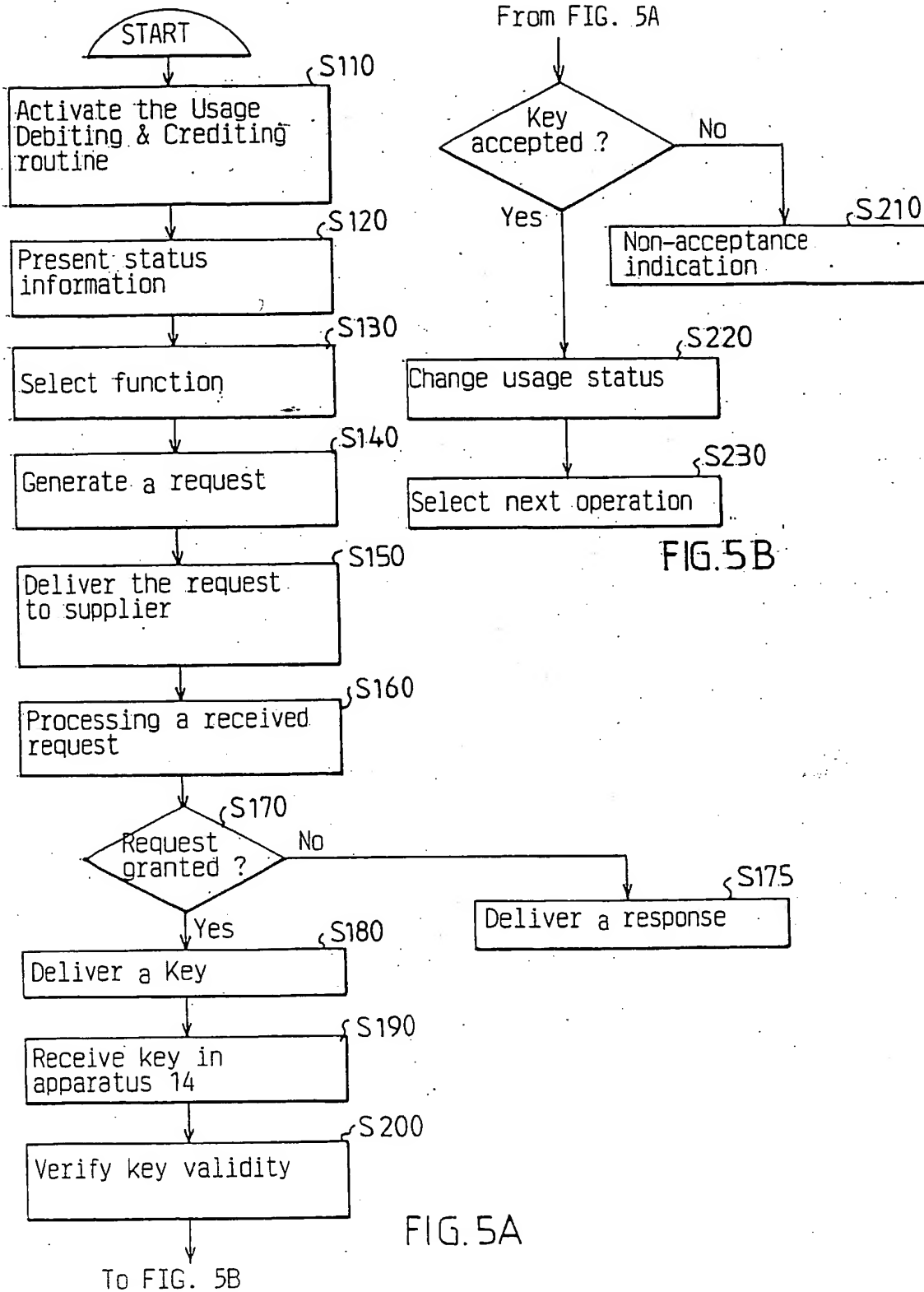
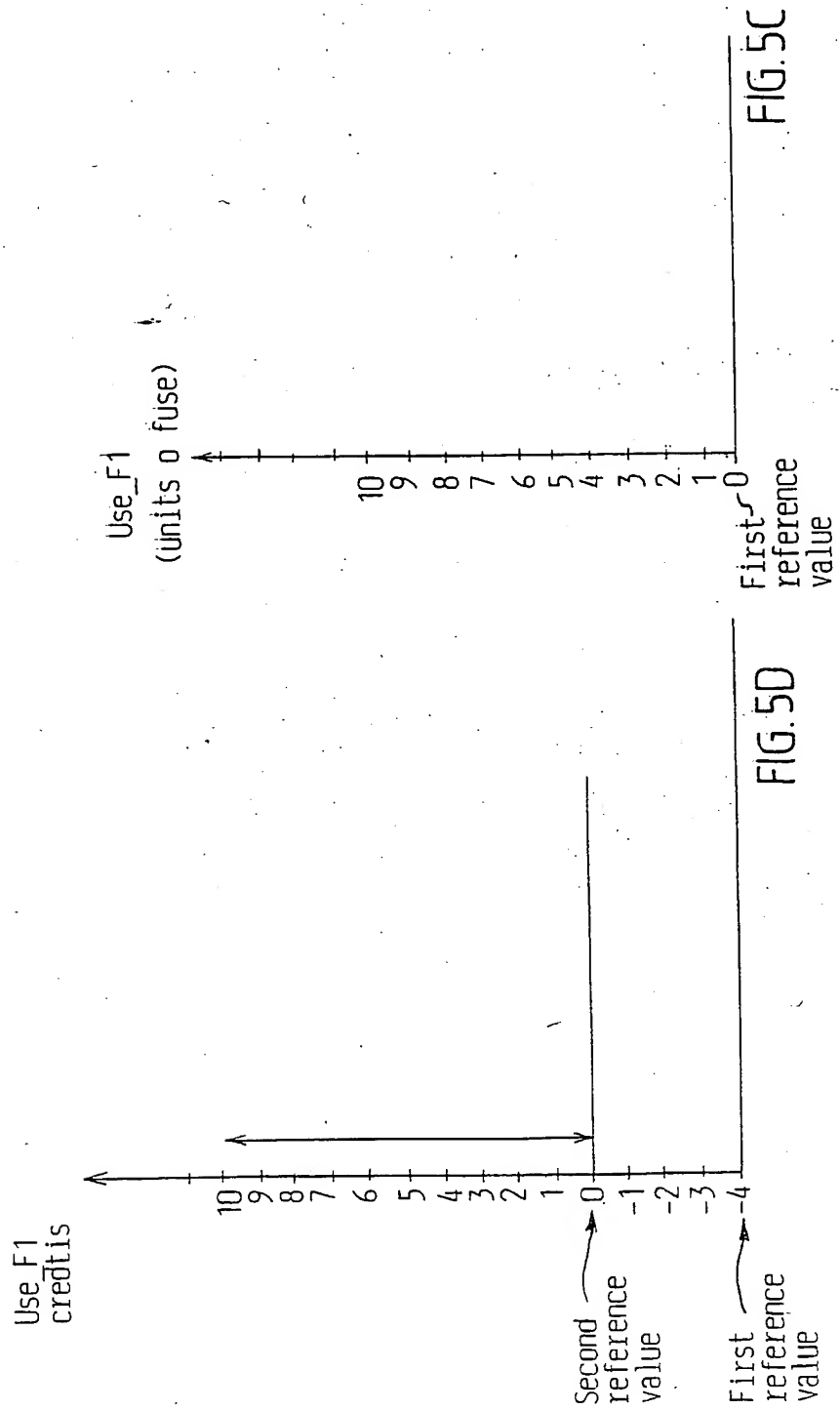


FIG. 4

4 / 15



5 / 15



6 / 15

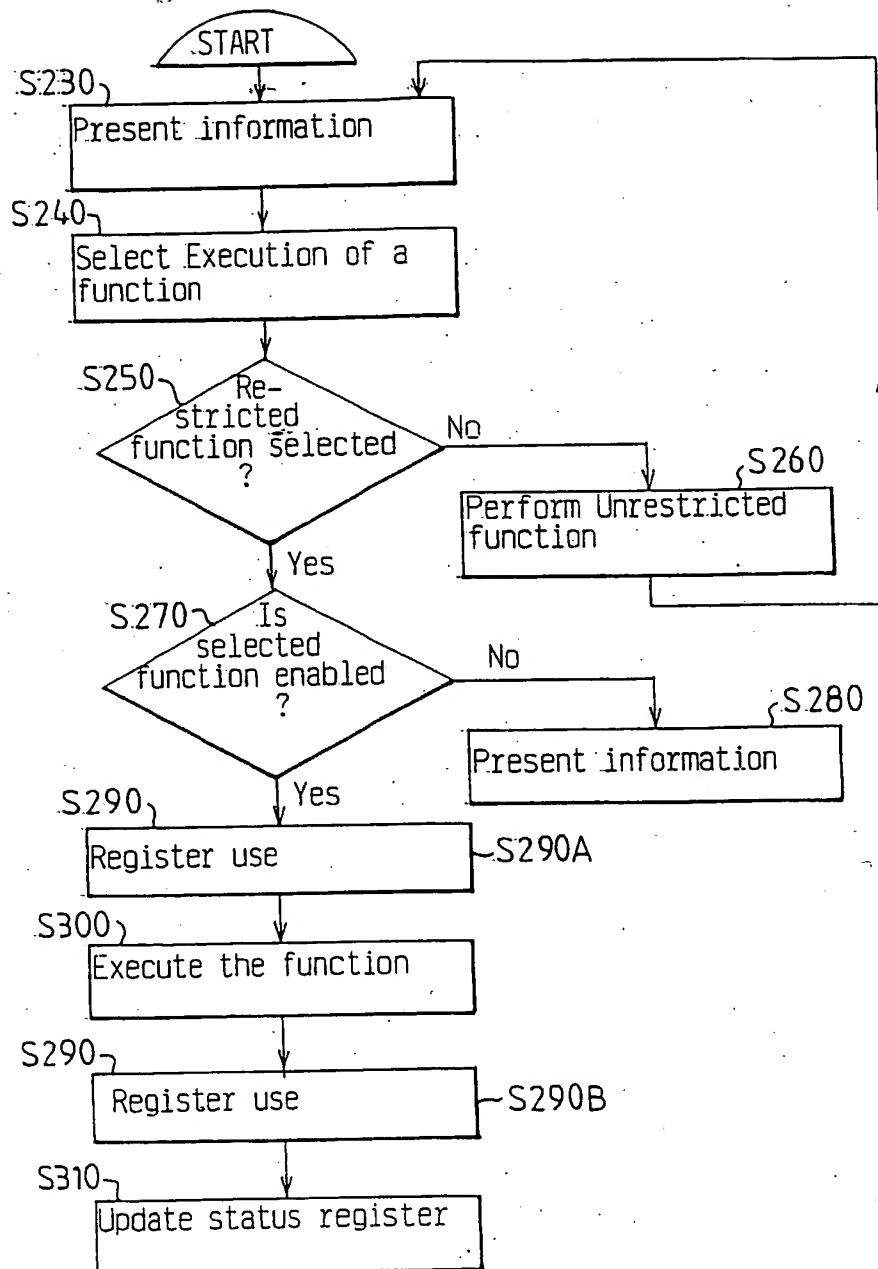
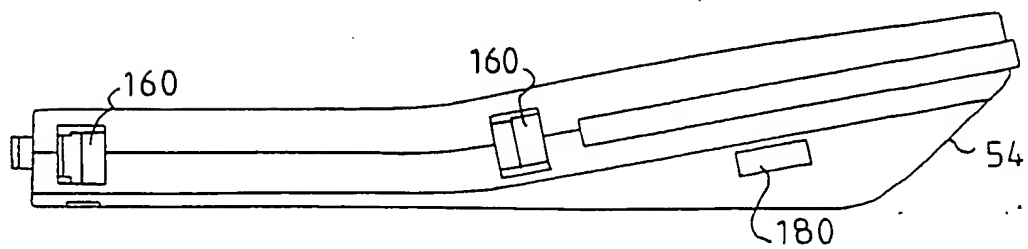
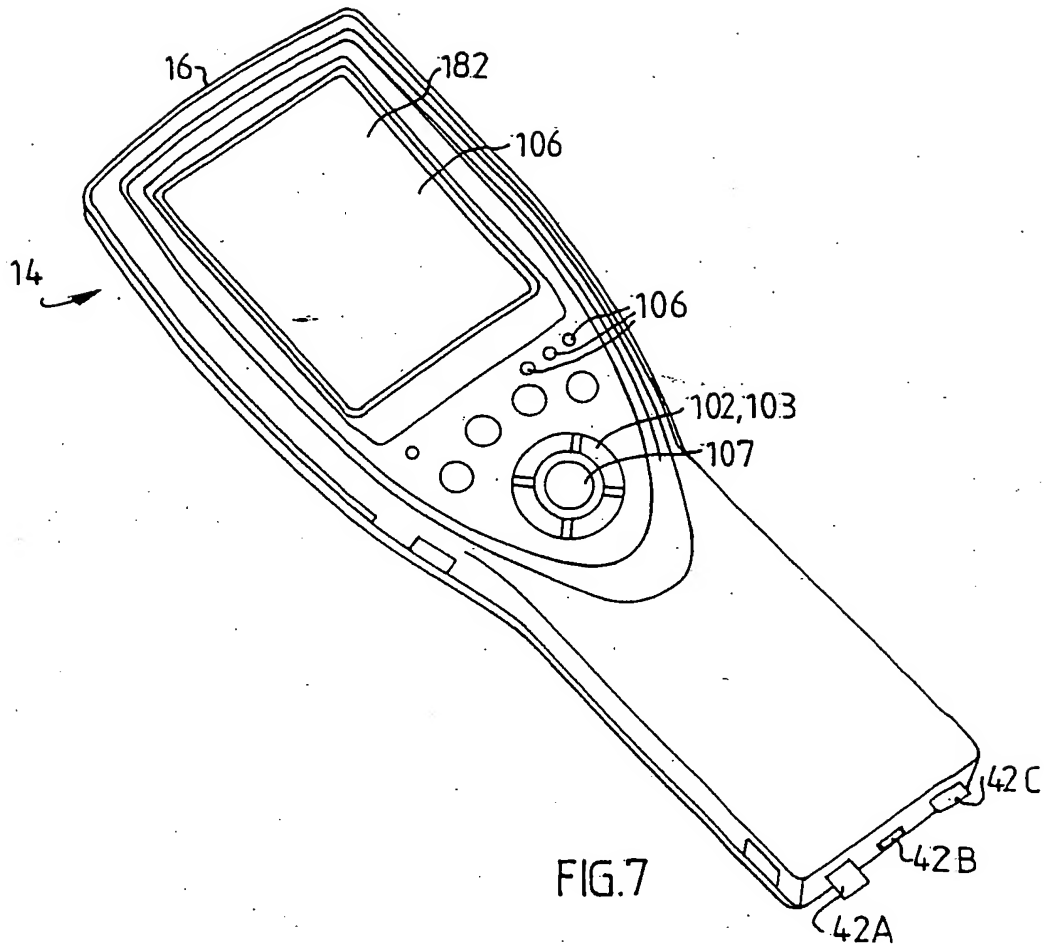
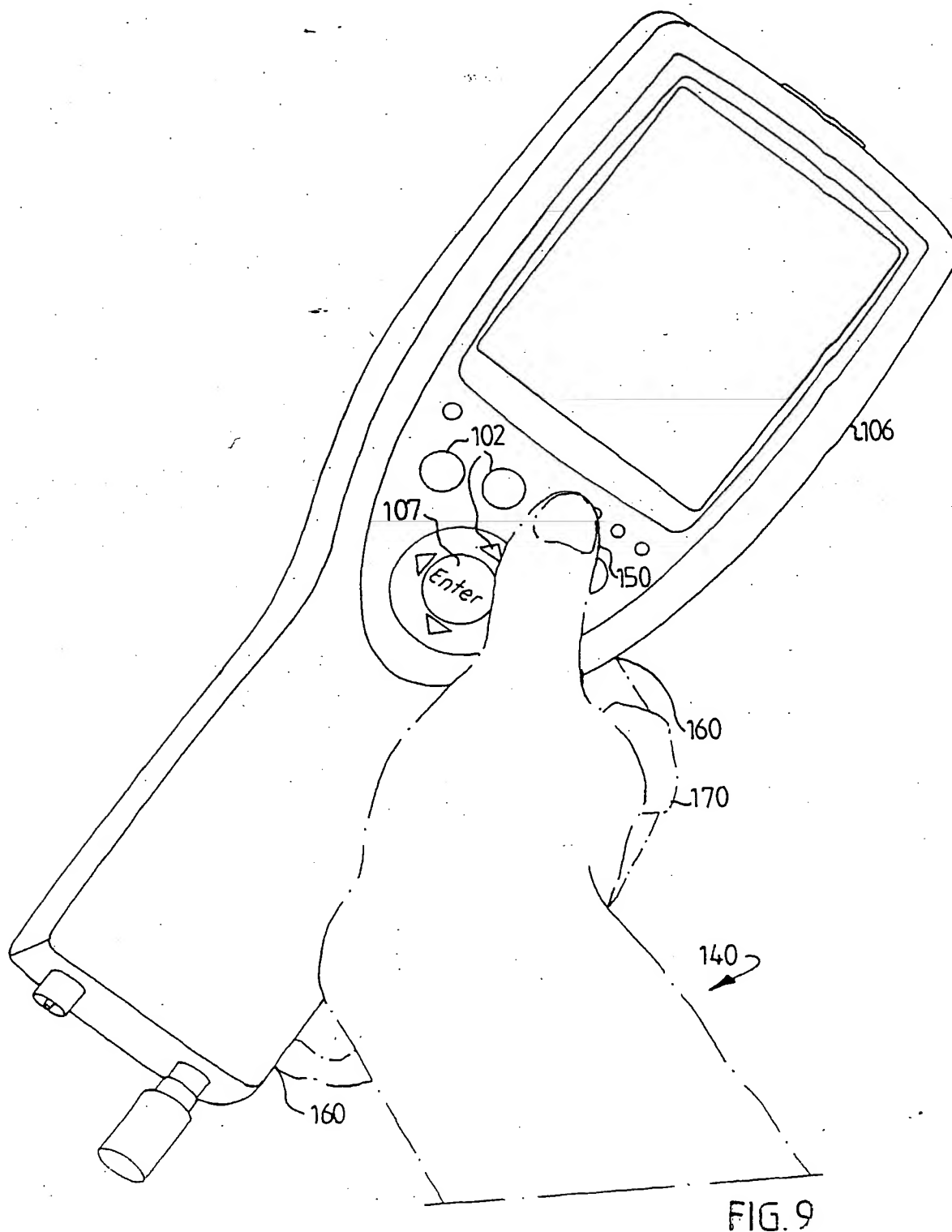


FIG.6

7/15



8 / 15



9 / 15

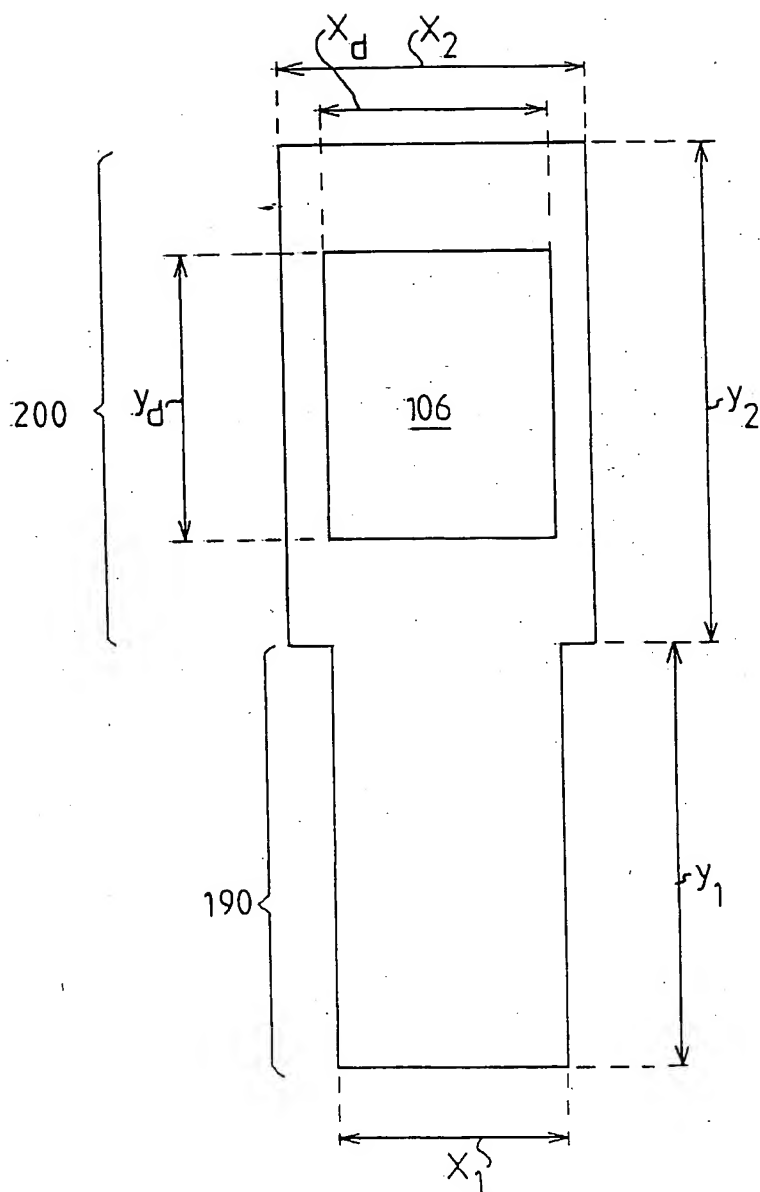


FIG. 10

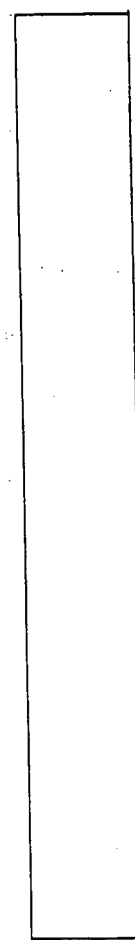


FIG. 11

10 / 15

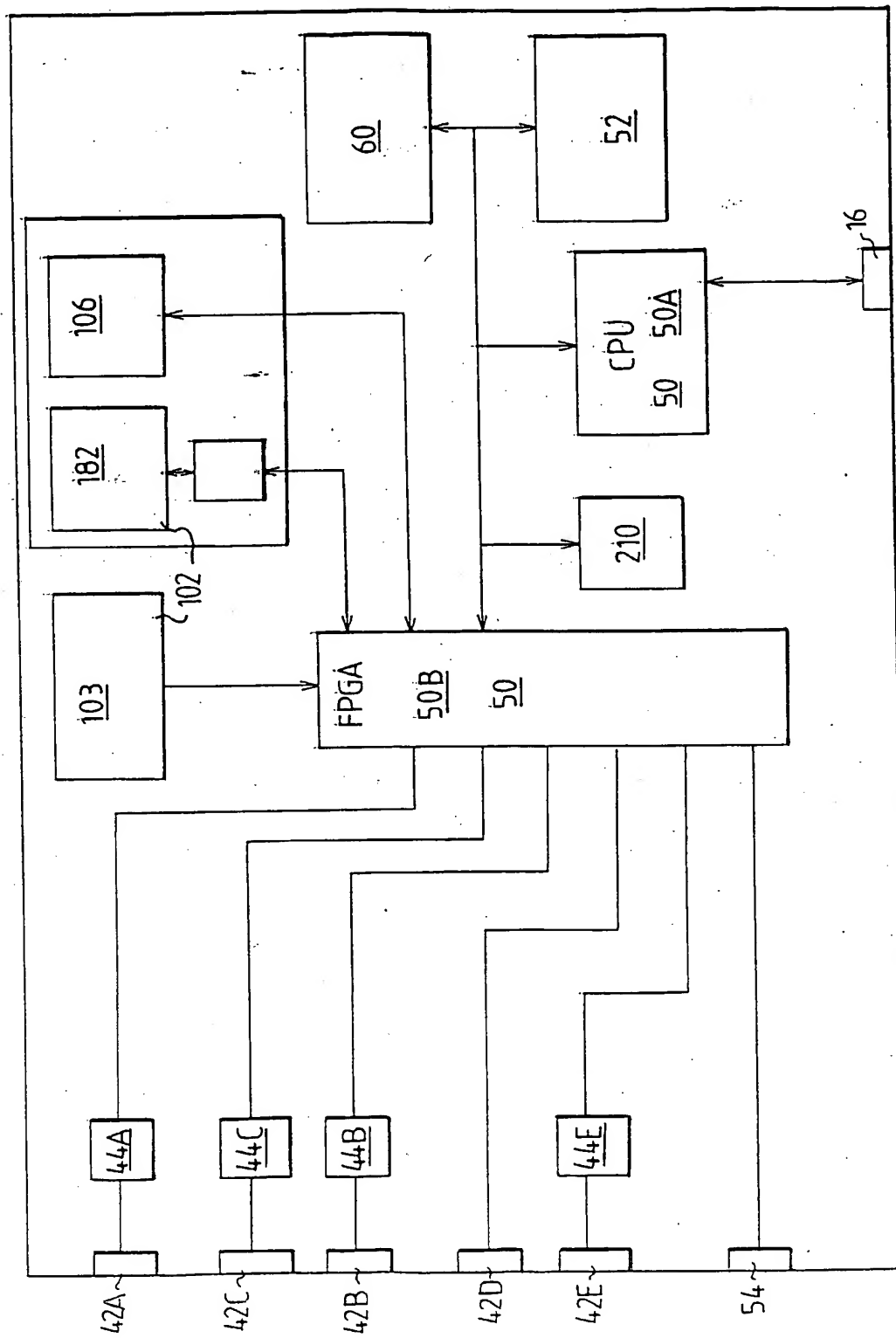
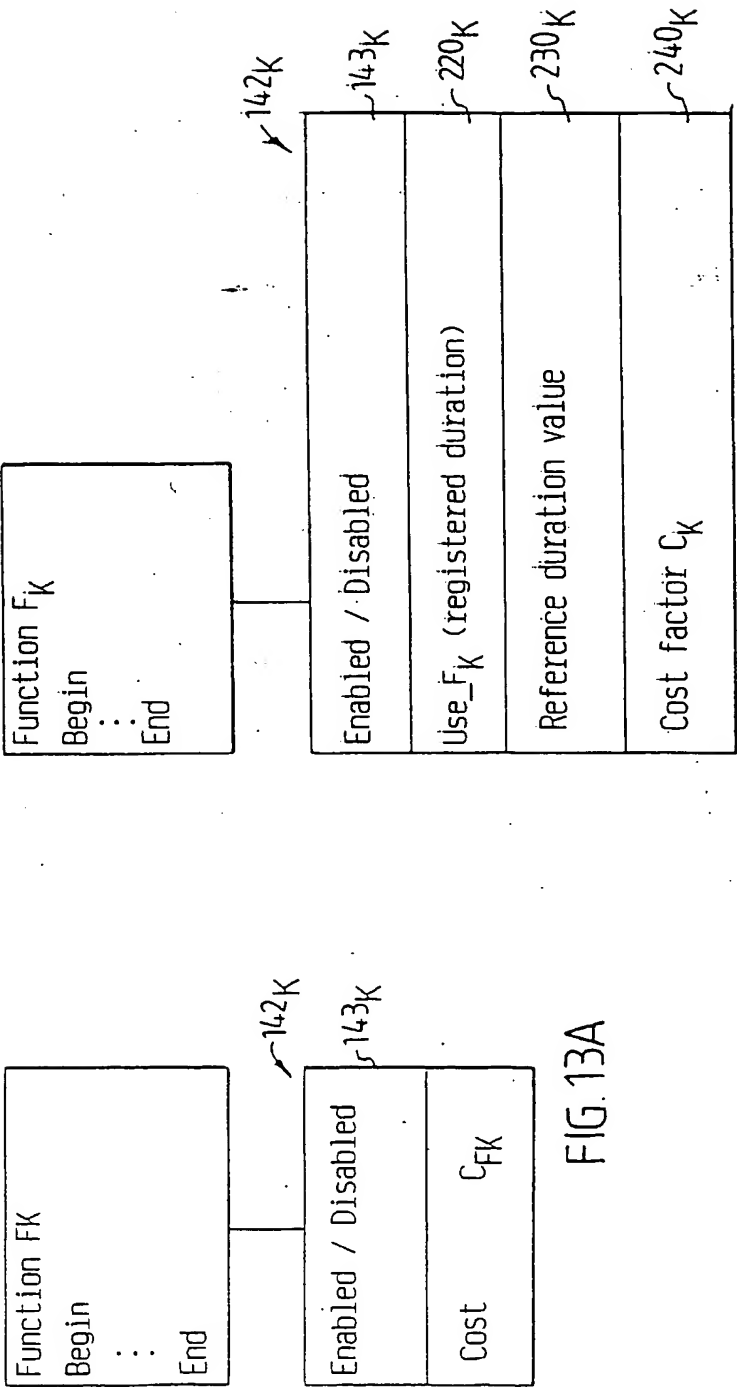


FIG. 12

14



12 / 15

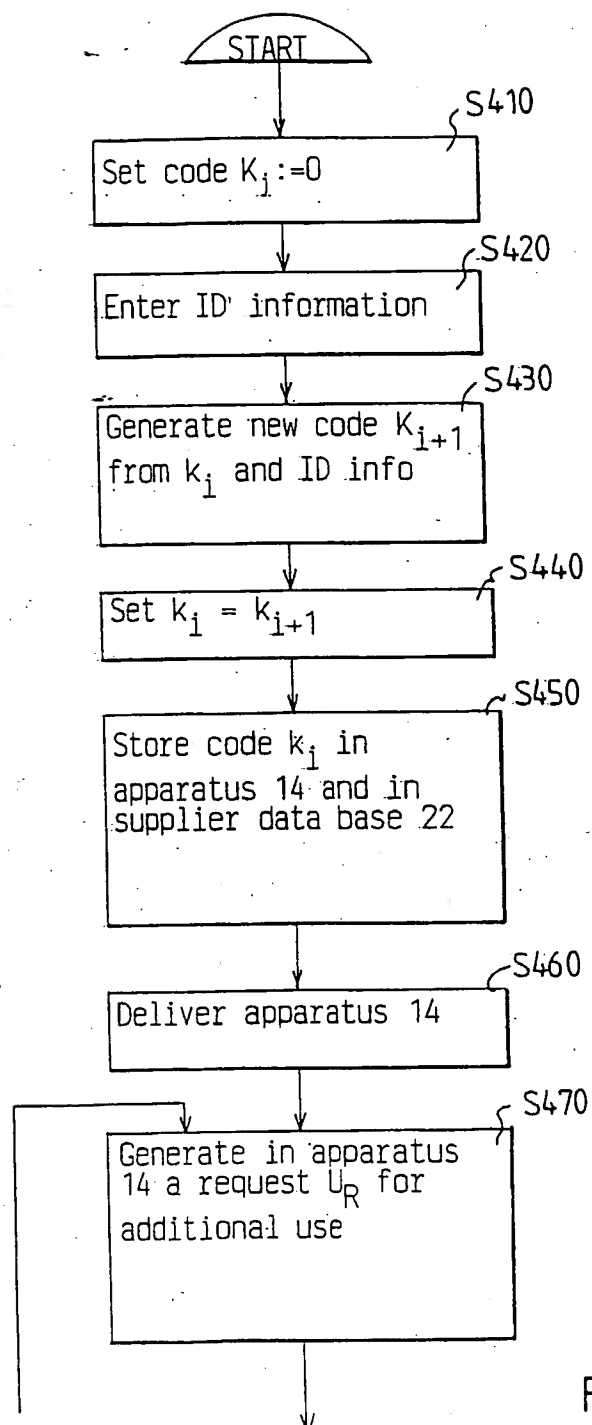


FIG.14A

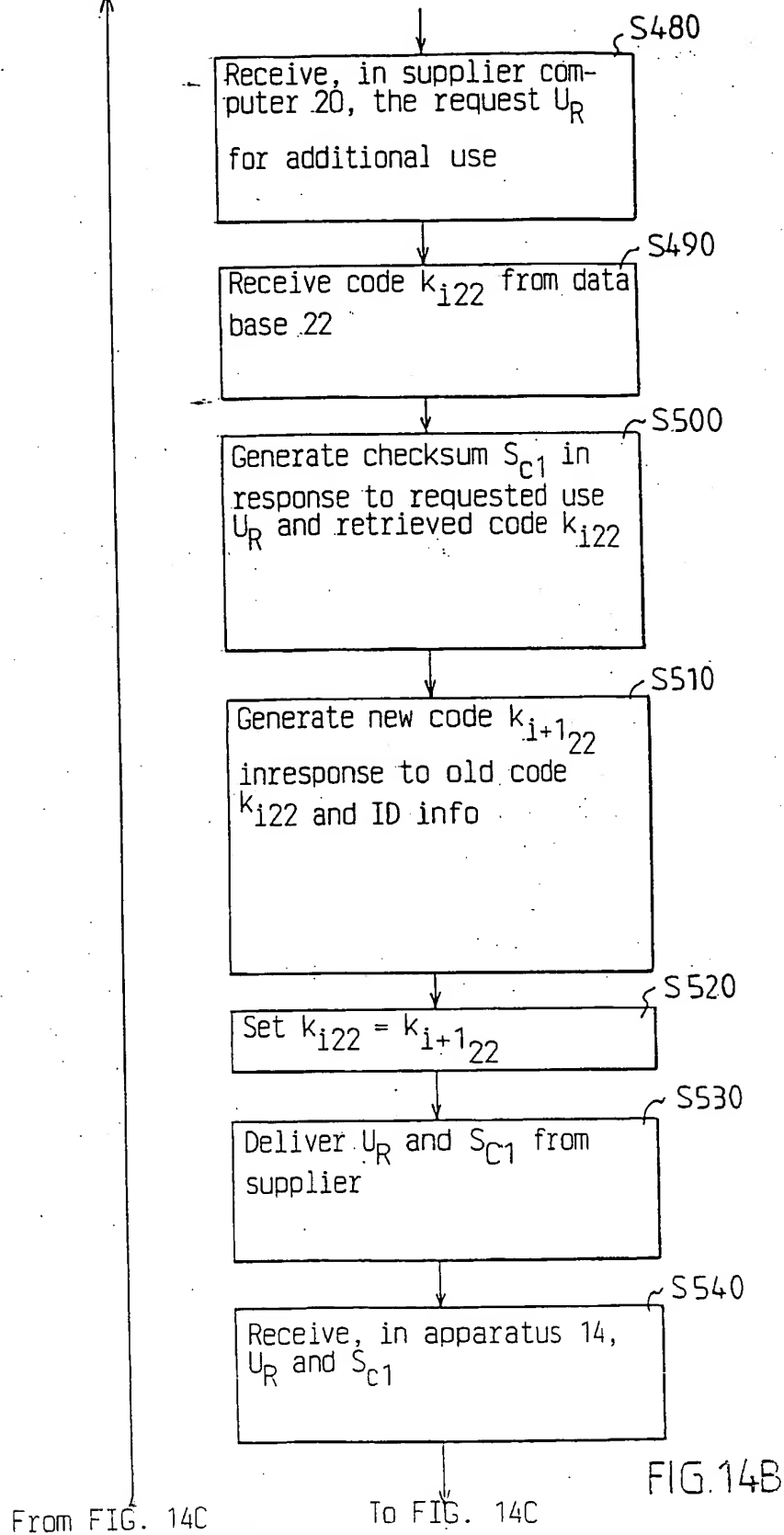
From FIG. 14B

To FIG. 14B

13/15

To FIG. 14A

From FIG. 14A



From FIG. 14C

To FIG. 14C

14 / 15

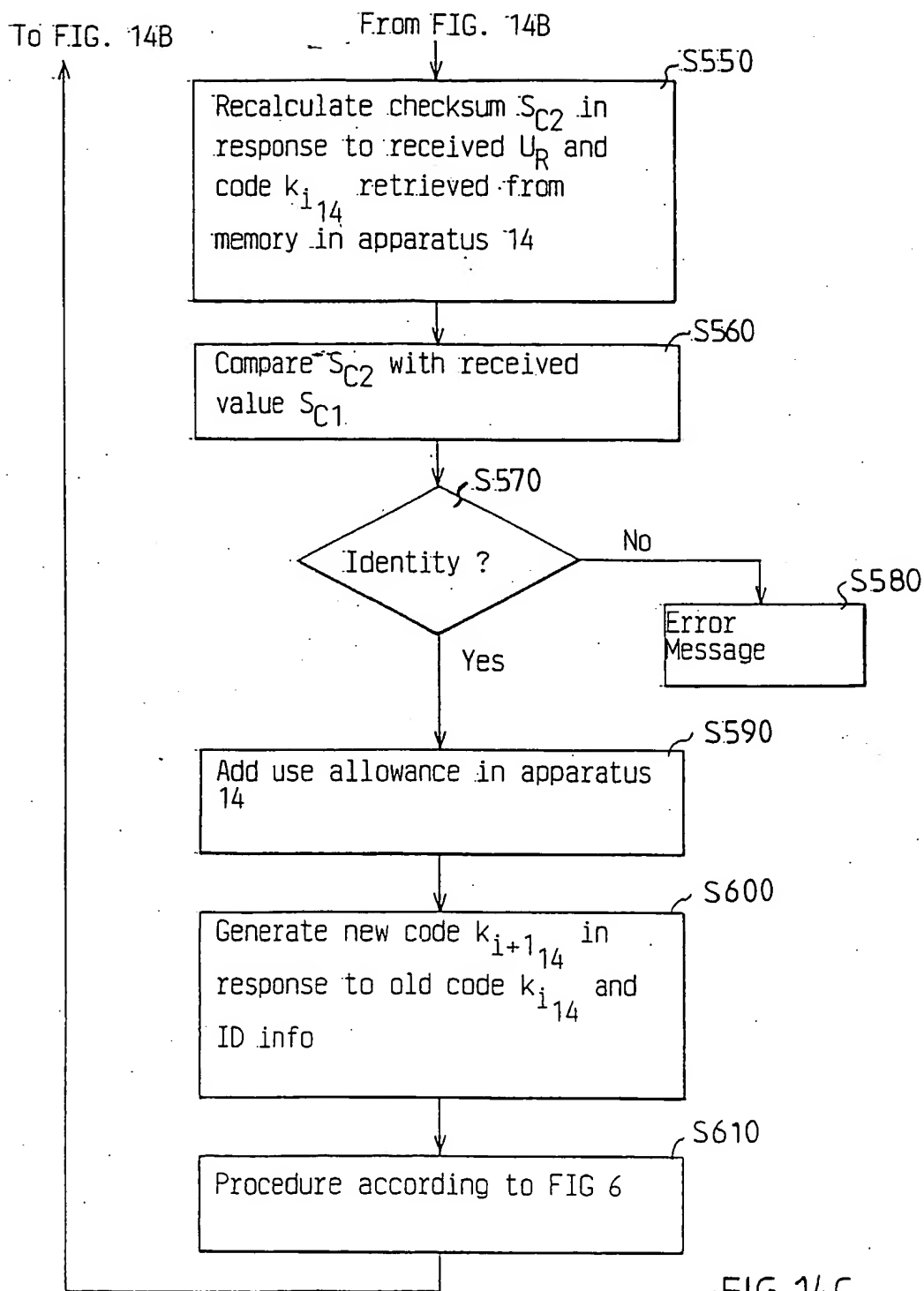


FIG. 14C

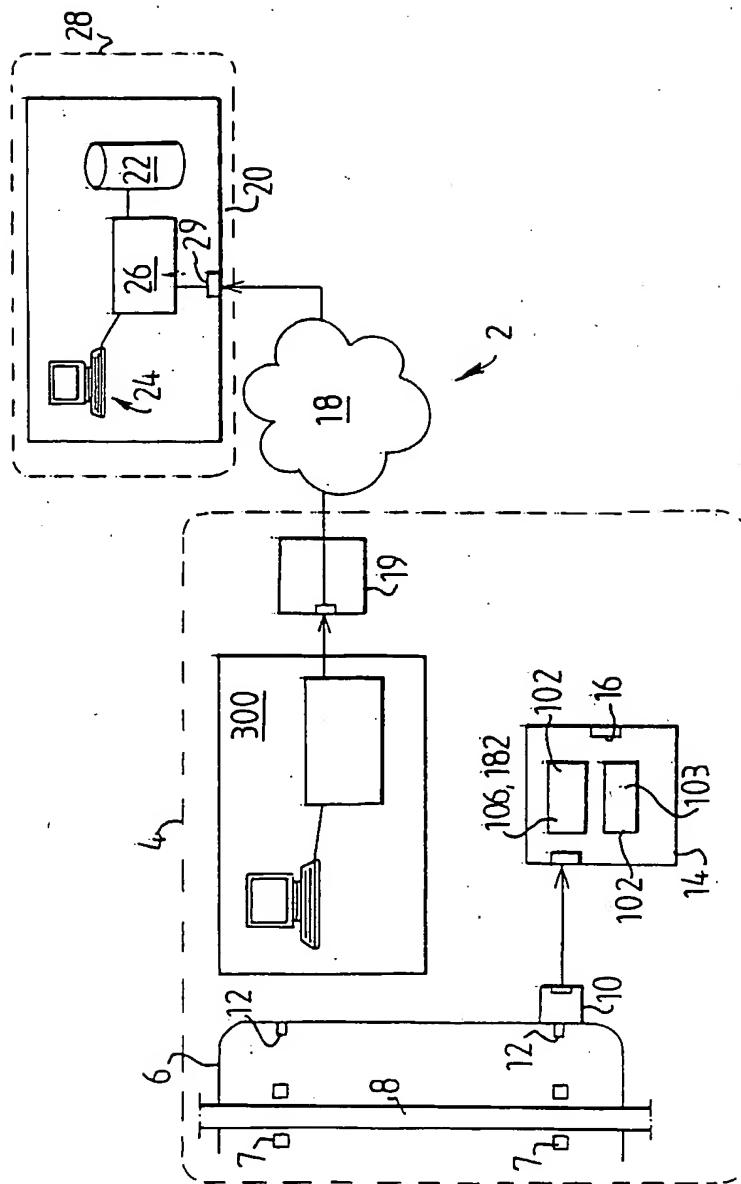


FIG. 15

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 000083

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G01H 1/00, G07C 3/00, G01M 13/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G01H, G07C, G01M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-INTERNAL, WPI DATA, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol.199, no. 609 30 September 1996 (1996-09-30) & JP 08 123868 A (DENSEI KK), 17 May 1996 (1996-05-17) abstract	1-38
A	US 6078874 A (PIETY ET AL), 20 June 2000 (20.06.00), abstract	1-38
A	EP 0905601 A1 (TLV COMPANY LIMITED), 31 March 1999 (31.03.99), abstract	1-38

☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier application or patent but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search

24 April 2003

Date of mailing of the international search report

28-04-2003

Name and mailing address of the ISA/
Swedish Patent Office
Box 5055, S-102 42 STOCKHOLM
Facsimile No. +46 8 666 02 86

Authorized officer

LARS JAKOBSSON/BS
Telephone No. +46 8 782 25 00

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 98/00083

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9801831 A1 (SPM INSTRUMENT AB), 15 January 1998 (15.01.98), abstract -----	1-38

INTERNATIONAL SEARCH REPORT

Information on patent family members

29/03/03

International application No.

PCT/SE 03/00083

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
US	6078874	A	20/06/00	GB	2343253 A,B	03/05/00
				GB	9916423 D	00/00/00
EP	0905601	A1	31/03/99	AU	715401 B	03/02/00
				AU	7732498 A	04/02/99
				BR	9802550 A	19/10/99
				CN	1093238 B	23/10/02
				CN	1206086 A	27/01/99
				JP	11037836 A	12/02/99
				NO	983298 A	25/01/99
				SG	72835 A	23/05/00
				ZA	9806395 A	03/02/99
WO	9801831	A1	15/01/98	AT	207228 T	15/11/01
				DE	909430 T	02/03/00
				DE	69707459 D,T	04/04/02
				DK	909430 T	28/01/02
				EP	0909430 A,B	21/04/99
				SE	0909430 T3	
				EP	1124204 A	16/08/01
				ES	2138942 T	01/02/00
				JP	2000517047 T	19/12/00
				PT	909430 T	29/04/02
				SE	510771 C	21/06/99
				SE	9602694 A	06/01/98
				US	6499349 B	31/12/02
				US	2001001135 A	10/05/01
				US	2001001136 A	10/05/01
				US	2003018439 A	23/01/03